

**FACTORS INFLUENCING ENVIRONMENTAL
MANAGEMENT PRACTICES TOWARDS CLEAN
DEVELOPMENT MECHANISM
IMPLEMENTATION IN MALAYSIA**

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By

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**FAKTOR-FAKTOR YANG MEMPENGARUHI AMALAN PENGURUSAN
ALAM SEKITAR KE ARAH MEKANISME PEMBANGUNAN BERSIH DI
MALAYSIA**

ABSTRAK

Mekanisme Pembangunan Bersih (CDM) adalah salah satu projek Amalan Pengurusan Alam Sekitar (EMPs) yang melibatkan negara-negara membangun dengan menawarkan peluang untuk menarik pelaburan di dalam teknologi tenaga bersih dan menggalakkan pembangunan mampan. Mekanisme ini dijangka memberi manfaat kepada ekonomi, alam sekitar dan sosial, dan ia dapat membantu untuk mencapai jadual pembangunan yang mampan. Melalui penyelidikan ini, tahap pengetahuan mengenai faktor-faktor yang mempengaruhi EMPs ke arah pelaksanaan CDM di Malaysia dan bagaimana faktor-faktor penyebab mempengaruhi pelaksanaan CDM. Objektif kajian ini adalah untuk mengkaji di dalam konteks Malaysia melalui sektor-sektor tenaga, pertanian dan perhutanan bagaimana faktor-faktor penyebab ini mempengaruhi EMPs ke arah pelaksanaan CDM di Malaysia dan menyelidik bagaimana rangkaian perniagaan dapat menjadi faktor sebagai moderatornya. Data yang dikumpul daripada kajian sebelumnya dan dokumen kerajaan yang berkaitan adalah sumber untuk menganalisis data dan akan menjadi asas kepada penyelesaian yang akan dikemukakan di dalam kajian ini. Bagi mencapai objektif ini, kajian ini memilih teori institusi sebagai asas teori untuk menghuraikan hipotesis-hipotesis yang dicadangkan. Akhir sekali, kajian ini akan mengemukakan cadangan-cadangan kajian lanjut mengenai bagaimana Malaysia boleh mewujudkan sinergi untuk mewujudkan anjakan paradigma di kalangan EMPs ke arah persekitaran hijau dan objektif pembangunan lestari.

FACTORS INFLUENCING ENVIRONMENT MANAGEMENT PRACTICES TOWARDS CLEAN DEVELOPMENT MECHANISM IN MALAYSIA

ABSTRACT

The Clean Development Mechanism (CDM) is one of the Environmental Management Practices (EMPs) projects that offer developing countries an opportunity to attract investment in clean energy technologies and promote sustainable development. The mechanism is expected to benefit economically, environmentally and socially, which means it will help to achieve the sustainable development agenda. This thesis synthesises the state of knowledge on the factors influencing EMPs towards CDM implementation in Malaysia and how the antecedents influence the CDM implementation. The objective of this research is to examine the Malaysian context in energy, agriculture and forestry sectors in terms of determining the factors influencing EMPs towards CDM implementation in Malaysia and investigate whether business networking is the moderator. Data collected from a review of the previous literature and related government documents is the source for further exploration for data analysis and will constitute the basis of the solution presented in this research. To achieve these objectives, this study selected the institutional theory as the theoretical basis to explicate the proposed hypotheses. Finally, this study provides recommendations and suggestions on further studies on how Malaysia can create synergies to create the paradigm shift among EMPs towards the green environment and sustainable development objectives.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Modern human civilization has met its formidable and complex foe – global warming. Over the last few years, it is finally acknowledged that the global warming concern provides an additional hazard to the planet, human lifestyles and the entire living nature in this world (Whaley, 2008, Norton & Leaman, 2004; Halady & Rao, 2009).

Global warming has been a subject of intense debate and controversy over the last few decades and continuing debates probably lie in the uncertainty in future. A scientific research by the Intergovernmental Panel of Climate Change (IPCC) suggested that the increase in the level of carbon dioxide (CO₂) in the atmosphere is believed to cause anthropogenic climate change. Moreover, the most current data stated by the IPCC clearly shows the unusual high temperatures and carbon emissions as the main contributors to global warming (IPCC, 2007). Even though the issues surrounding climate change are perceived as being rather new, the history of research in the area reveals some studies in the nineteenth century which had involved the concept of global warming (Labatt & White, 2007).

According to the IPCC 2007 Fourth Assessment Report (*AR4*), the world weather changing from normal nature and the global temperature have increased by about 0.74 Celsius since the 20th century. This significant temperature change has caused an interference with the ecological system (IPCC, 2006). Consequently, there are a few reported cases of extreme weather events which have occurred worldwide.

This further supports the idea that the nature itself is undergoing some radical change.

In order to reduce the impact of global warming, it is crucial to launch a mitigation process. In response, countries worldwide have begun to develop policy as a governance mechanism in order to reduce the greenhouse gas (GHG) emissions. The 1992 International Convention in 1992, the Kyoto Protocol was introduced in order to obligate industrialized nations to accept responsibilities in reducing GHGs emissions. Moreover, increase in atmospheric accumulation of GHGs and the certainty of adverse impacts require urgent action from the world (Parry, 2007) to overcome the global problem.

Therefore, mitigation to climate change is one of the major responses to climate change. The IPCC and the United Nations Framework Convention of Climate Change (UNFCCC) have been set up to take an action on setting standard guidelines (ADB, 2007:2008). The actions under the Kyoto Protocol enforced from the UNFCCC that establishes three mechanisms for obtaining the carbon credits. One of the mechanisms called Clean Development Mechanism (CDM) allows investors and governments in developed countries to invest in projects in poorer countries. Implementing new technology development for green projects can create a new technology besides promote sustainable growth, thus, it is apparently will help to raise people living standards and contributes to sustainable development. Hence, it is necessary to have a closer attention towards the issue of the global warming because this issue probably will affect the global economy, business and society as a whole.

This chapter introduces the research outline of the study, which begins with an overview of the issues regarding climate change. This is followed by a discussion on the global warming, climate change policies implementation and mechanisms under the Kyoto Protocol with focus on the CDM in Malaysia. This chapter also includes the problem statement, research objectives and research questions. The key terms and significance of the study will also be elaborated.

1.2 Research Background

The current trend is that the global consumers have started giving preference to companies that produce environmentally responsible products (Tachizawa, 2006). In other words, in an effort to improve the environmental performance, companies from various sectors has developed several voluntary agreements between the government to encourage technological innovation (Delmas & Terlaak, 2001), which encourage companies to implement the Environmental Management Practices (EMPs).

As the climate change issues and pressures push firms to seriously considering environmental impacts while doing their business (Eltayeb, 2009), a green product and green projects have becomes a common practice to portray the environmentally-friendly image. Although climate change becomes a challenging issue to business organizations in recent years, the trends on green practices increase the pressures and inspection from stakeholders inside and outside organization to engage in environmental practices and tries to eliminate negative environmental impacts (Eltayeb, 2009).

In an effort to mitigate the climate change and increased in environmental practices among companies, the United Nations (UN) has adopted the United Nations Framework Convention on Climate Change (UNFCCC) to address the

global warming problem. The objective of the UNFCCC was to reduce emissions that are contributing to global warming.

The UNFCCC under Kyoto Protocol negotiated in 1997 only applied to developed nations and imposed emission reduction. UNFCCC targets to reduce emission levels below 1990 levels and covered a five year commitment period (2008 – 2012). To achieve the target, countries need to implement domestic policies and measures that mitigate climate change and support sustainable development. The Protocol makes provision for the participating countries to reduce emissions through carbon sinks or emission trading through the CDM projects (MGTC, 2011).

The CDM project is one of the environmental practices projects, which is implemented by developing countries to assist developed countries that have ratified the Kyoto Protocol in order to reduce the greenhouse gas emissions. By implementing this project, the developed countries can earn Certified Emissions Reductions (CER) through investments within CDM projects in developing countries. To earn CERs, CDM project must be approved by the host country CDM approval authority and the CDM Executive Board (CDM EB) for CERs verification.

Malaysia became a Non-Annex 1 Party to the UNFCCC when it ratified the UNFCCC in 1994 and joined the Kyoto Protocol in 2002 (MGTC, 2009). As a developing country, Malaysia has no quantitative commitments under the Kyoto Protocol at present but Malaysia has target in order to achieve the UNFCCC which to meet reduction of 20% of CO₂ emissions by 2020. However, through the EMPs, Malaysia can voluntarily participate in globally reducing emissions of greenhouse gases such as CDM.

Based on emission reductions data provided in the Project Design Documents (PDDs) for 3,949 projects registered with UNFCCC or undergoing registration as of June 2012, Malaysia estimated emission reductions (CO₂ e/year) was 6,293,316 with total of 583,423,033 (UNFCCC, 2012). Among China, India and Brazil, Malaysia has shown a progressive improvement in implementing CDM and one of the largest numbers of CDM projects with 96 projects in 2011 and expected to increase to 120 projects by the end of December 2012.

According to previous studies in Malaysia none had really looked into the influences of business networking in environmental practices towards CDM implementation. However, the idea on the presence of a business networking will assist in the dissemination of specialized and market intelligence (Collins et. al, 2007) in business to promote growth and new technology. In general, a business network is indeed vital for the success of business as it serves as a platform for information sharing. In the climate change effort, the role of business network can help to assist in spreading of specialized information and new market intelligence, lobbying over national issues, and the development of critical mass for more effective competition (Collins et al., 2007). Thus, looking into the business networking in this research creates an idea whether this factor encourage EMPs to implement CDM.

Therefore, in the lack of a well-developed or convincing body of literature that can clearly articulate about CDM implementation in Malaysia, this research aimed to fill this gap by examining the influencing factors on EMPs and antecedents to implement CDM and examine the relationship on business networking towards CDM implementation.

1.2.1 Global Warming and Climate Change

Providing information about the climate change has often been considered to be the first step (Fischhoff, 1995) along with spreading awareness and knowledge have been identified as important elements in addressing the climate change issue (Halady & Rao, 2009). Thousands of scientists around the world had discovered about the extraordinary events of global warming obviously affect the weather and getting worst in future (Spenser, 2003).

In defining the expression of “climate change” by UNFCCC is :

[...] a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods (UNFCCC, Geneva).

The changes in climate are caused by an increase in quantities of greenhouse gases in the atmosphere. The changes are due to the impact of human activities throughout the world. GHGs consist of several of dangerous gases. The most important of which are - carbon (IV) oxide (CO₂), methane (CH₄), dinitrogen-oxide (N₂O), hydrofluorocarbons (HFC), perfluorocarbons (PFC) and sulphur-hexafluoride (SF₆). However, the increase of human activities has proven to be a significant impact on enhancing this natural behavior. Indeed, this global warming phenomenon is also known as the “Greenhouse Effect” (Azlan & Mehran, 2008).

Most of the discoveries show the patterns of sea level rise, low-level plain, floods, flood frequency increase; and other weather-related natural disasters likely to occur around the world endangering millions (Halady & Rao, 2009; Whaley, 2008; WRI, 2004; IPCC, 1996; IPCC, 2007).

The effects and consequences of these can be less severe than this and the entire world trying to adapt to the climate change (Adger, 2003). Still, the climate change will have a positive and negative effect but adverse effects of the unexpected weather and climate change (IPCC, 2001). However, adapting to climate change in future will become that much harder, and that much more expensive, to the extent that the changes occur faster, or on a larger scale (IPCC,2007); thus, a necessary action should be consider by now.

1.2.2 Environmental Management Practices and Climate Change

Environmental management represents specification of how organizations care about the natural environment and minimize the negative environmental effects of their entire operations (Klassen & McLaughlin, 1996; Welford, 2000). Environmental management practices principles specify policies, procedures, and audit protocols for controlling operations that create waste materials or emissions (Matthews, 2003).

Stern (2006) highlights that the current status of these factors will determine the scope of the impacts of climate change on a country's social, economic and environmental conditions. He further describes vulnerability to climate change as consisting of *exposure* to climate change, the *sensitivity* – being the responsiveness of a system to climate change and *adaptive capacity* – relating to a country's ability to prepare for and address the negative effects of climate change (Stern, 2006). Similarly, Stiles (2006) encourages organizations to understand the direct physical

effects of climate change on their respective business activities, to understand the response measures undertaken by other organizations within the organization's value chain and to create carbon assets through mitigation. The measures of carbon assets refer to an organization with environmental practices manage to reduce GHGs emissions and generate a tradable asset which can be used to generate revenue and create environmental- friendly company.

As in Malaysia context, EMPs has been in Malaysia Plan (MP) which provides a road map of socio- economic and environmental practices policies. Highlighted in the Third Malaysia Plan, covering the years 1976 to 1980, was the first to incorporate an environmental policy aimed at integrating environmental concerns into development planning. Since then, with the further plan, the government has made its environmental policies more substantial and concrete. Most of the objectives of Malaysia's national environmental policies are to achieve a clean, safe, and healthy living environment for current and future generations, and to promote lifestyles and modes of production and consumption consistent with the principles of sustainable development. The overall direction of the Malaysia Plan, then, is to enhance the nation's environmental policies in order to reconcile the interests of development and the environment (Seventh MP, 2007) and create a sustainable future of Malaysia.

1.2.3 The Idea of Clean Development Mechanism

A company with environmental practices can distinguish themselves from their competitors through improvement in environmental performance and strategy. Based on several studies highlighted, the special role of the CDM in bringing different priorities around the world and development between the developed and developing

countries reflect the win-win opportunities and will establish the success of the mechanism (Michaelowa & Dutschke 2002; Matsuo, 2003). The purpose of the CDM not only contributes to sustainable development, but also benefits including investments, technology transfer, contributions to poverty alleviation, rural development and provides new opportunity for building skills and knowledge (Kaupp, Liptow et al. 2002; Bhandari 2003), especially in developing countries.

In analyzing the possible future of EMPs and CDM to sustainable development, the significant benefits such as rural development and biodiversity need to be examine in order to recognize and respond to the non-carbon benefits of the projects (Klooster & Masera, 2000) to the society and environment in developing countries such as China and India.

Furthermore, based on UNFCCC reports, more than 3,355 CDM projects have qualified for carbon credits (CDMR, 2010; UNFCCC, 2011) and stated by the United Nations Conference on Trade and Development (UNCTD) report 2008, the CDM projects show an improvement since 2006 and there are more than 5,600 CDM projects are up and running (CDMR, 2010). Although the carbon market volumes has been growing from time to time in CDM projects development (CDMR, 2010), it is crucial to note the overall market transformation and investment still remain a challenge (UNCTD, 2008).

1.2.4 Clean Development Mechanism in Malaysia

Malaysia has been successfully transformed itself, since the 1970s as a producer of raw materials onto an emerging multi-sector economy in the 21st century. Malaysia is experiencing rapid economic development and the country GDP has grown annual rate of 2.40 percent in second quarter of 2010 from the previous quarter. In

continuing efforts to boost economy, Malaysia is also committed in protecting the environment and it is evident in the initiatives undertaken both domestically and internationally (MATRADE, 2010). To reach the sustainable development goal, Malaysia Government is focusing on operational the National Policy on the Environment in 2002, the national Green Technology Policy and the National Climate Change Policy in 2009.

Country	No	Country	No
Albania	1	Liberia	1
Argentina	23	Madagascar	1
Armenia	5	Malaysia	96
Bangladesh	2	Mali	1
Bhutan	2	Mauritania	1
Bolivia	4	Mexico	129
Brazil	194	Mongolia	3
Cambodia	5	Morocco	5
Cameroon	2	Nepal	4
Chile	49	Nicaragua	5
China	1509	Nigeria	5
Colombia	32	Pakistan	12
Costa Rica	8	Panama	7
Cuba	2	Papua New Guinea	1
Cyprus	6	Paraguay	2
Côte d'Ivoire	3	Peru	24
Democratic Republic of the Congo	2	Philippines	55
Dominican Republic	2	Qatar	1
Ecuador	16	Republic of Korea	61
Egypt	9	Republic of Moldova	4
El Salvador	6	Rwanda	3
Ethiopia	1	Senegal	2
Fiji	2	Singapore	2
Georgia	2	South Africa	19
Guatemala	11	Sri Lanka	7
Guyana	1	Syrian Arab Republic	3
Honduras	18	Thailand	54
India	704	The former Yugoslav Republic of Macedonia	1
Indonesia	70	Tunisia	2
Iran (Islamic Republic of)	6	Uganda	4
Israel	22	United Arab Emirates	5
Jamaica	1	United Republic of Tanzania	1
Jordan	2	Uruguay	6
Kenya	5	Uzbekistan	11
Lao People's Democratic Republic	1	Viet Nam	69
		Zambia	1
Total			3355

Table 1 - 1: Number of CDM projects registered under UN. (UNFCCC CDM statistics, 2011).

As indicated by Table 1.1, Malaysia is considered as one of the highest contributors of CDM projects in the world, with a total of 96 projects as of year 2011. This shows a success numbers on CDM implementation in Malaysia. Most of these CDM projects are large-scale projects in the energy sector; waste sector, subsidized technologies include landfill gas, incineration, hydropower and cement kilns (Marciano, 2009).

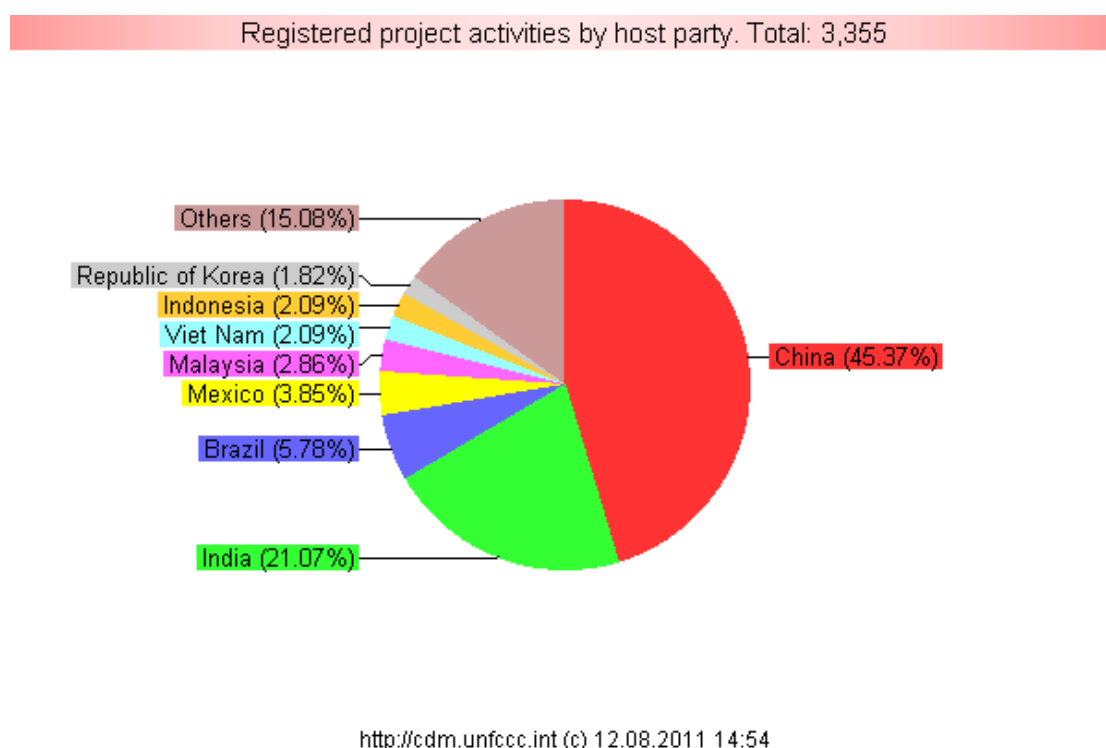


Figure 1- 1 : Registered CDM projects by host country (UNFCCC, 2011)

Figure 1.1 is an illustration of registered projects based on percentage from the biggest contributor of CDM projects and according to the latest report by the IPCC (2007) and UNFCCC (2010), India and China are the biggest takers with a combined share of more than 50% of the projects. As pointed out by Marciano (2009), more than 3000 projects expecting for registration and CDM expects to

generate approximately 3 billion CERs by 2012 (UNFCCC, 2012), by the first Kyoto commitment period ends.

From this information, the main factor to this market based mechanism is that by implementing CDM, the EMPs companies can earn CERs from its investment and provides a positive impact to the economy and environment. Anyhow, the factor contributing to CDM implementation in Malaysia will be discover further in chapter 2 for larger scope of explanation. Although the developing countries are still in the beginning of the green technology project, it has yet to be shown that the CDM is indeed helping poorer countries move forward to a more sustainable future (Marciano, 2009; UNFCCC, 2010; UNDP, 2008).

As an encouragement in adopting the EMPs among Malaysian companies, domestic initiatives such as the implementation of the Ministry of Energy, Green, Technology and Water's, the National Green Policy such as Green Technology Policy in 2010 has been introduced in order to promote businesses in practicing green construction and innovation towards sustainable development.

The basic principles of CDM project in Malaysia should meet the proposed criteria for CDM project to be implemented in Malaysia such as: (UNFCCC, 2002; PTM, 2002; UNEP, 2009; Paul & Glenn, 2009):

- a) The CDM project must contribute to the Malaysia's sustainable development policies in relevant sector and at the same time boarder Malaysian economy.
- b) The CDM project proposed should involve with Annex 1 countries and provide the technology and equity to Malaysian project.

- c) The Annex I Party buys the CERs from the project, and provides equity, technology for the project.
- d) The CDM implementation should provide technology transfer and improvements in technology include software and hardware and lead to environmentally sound technologies to support the sustainable development objectives.
- e) The objectives should be achieved in real, measureable and long-term benefits related mitigation of climate change and reduction in GHGs
- f) The project also contributes to skills transfer, learning and employment.

Thus, adopt and adapt to the environmental practices projects especially for developing countries is to create an opportunity to discover networking potential and creates more environmentally friendly society while continuing to further the progress of the development of the three pillars of sustainable development, namely economic growth, social progress and environmental protection.

1.3 Problem Statements

The issue of the climate change has been dominating policy debates among various stakeholders around the globe. Malaysia for example, is among many other countries around the world trying to mitigate the climate change issues by adopting in EMPs and implementing environmental projects from various industries which largely to increase from time to time.

From the developing countries point of view, the environmental practices project is expected to have significant effects in the climate change regime mostly because of its positive characteristics. Some of these effects are to assist developed

nations in reducing the cost of climate change mitigation and at the same time allowing developing nations to contribute to sustainable development. Regards to the implementation of environmental practices within industries, the practices expected to generate employment, technology transfer, environmental improvement, generation of income, attraction of foreign investment, de-carbonization of the economy, involvement of developing countries in the climate change regime.

In Malaysia, the development of the market-based environmental project such as CDM among the environmental practices companies is still in the beginning process and has been regarded as slow but increasing. According to Njobeni (2006), the slow movements of this CDM project is because of the development is still in the beginning stage and most of the EMPs companies in developing countries define it as complex practices because of uninformed production design; complex CDM program registration process; limited availability of experienced service providers; small carbon saved over large client base, low-end beneficiary awareness, acceptance and externality costs (Guy, 2008) that creates barriers in implementing the CDM and shows most of the EMPs companies are not ready to participate with this project.

Furthermore, based on the Table 1.1, Malaysia has reached 96 projects in 2011 and the number of projects expected to increase to 120 CDM registered projects by the end of 2012 (UNFCCC, 2011). Thus, it is necessary to examine the influence factors that encourage some of the EMPs companies to implement CDM projects and understand the factors in implementing the projects which can improve the rate of CDM implementation in Malaysia.

Therefore, in order to understand why the EMPs companies implement the CDM or not implementing CDM, the research will provide better understanding about what are the factors that determine the adoption of EMPs which eventually to

the adoption of CDM. Another issue of concern is the link of business networking between EMPs and CDM implementation whether the business networking is one of the encouragements for EMPs to engage in CDM.

As part of the study, another issue raised is that the adoption of EMPs that affects firms' decisions to adopt the CDM maybe varies due to different level of institutional pressures either internally or externally. Benedick (1998) argued that firms are more likely to mimic the environmentally practices behavior of their competitors, in turn has failed some of the firms. This research is structured to determine the research questions on EMPs companies in Malaysia that can be achieved within the energy, agriculture and forestry industries in Malaysia according to institutional theory.

In general, the issues of concern have created intention of this research to determine and investigate the influencing factors of EMPs adoption among companies in Malaysia focusing on energy, agriculture and forestry industries and what are the factors that encourage EMPs companies to implement the CDM. Secondly, this study will be able to examine whether high EMPs will translate into implementation of CDM and examine whether members among business network influence CDM implementation.

1.4 Research Objectives

The primary objectives of this research paper are:

1. To investigate the influencing factors of EMPs adoption in Malaysia.
2. To investigate the relationship of influencing factors and EMPs within the agriculture, forestry and energy industries in Malaysia.

3. To investigate the influencing factors for EMPs towards CDM implementation within the energy, agriculture and forestry industries in Malaysia.
4. To examine the relationship of EMPs towards CDM implementation within the energy, agriculture and forestry industries in Malaysia with business networking as moderator effect.
5. To investigate the antecedents factors influencing CDM implementation within the agriculture, forestry and energy industries in Malaysia.

1.5 Research Questions

This study will be conducted to answer the following research questions:

1. What are the influencing factors that encourage companies to adopt the EMPs?
2. What is the relationship between the influencing factors and EMPs within the agriculture, energy and forestry industries in Malaysia?
3. What is the relationship between the EMPs and CDM implementation within the agriculture, energy and forestry industries in Malaysia?
4. What is the relationship between EMPs and CDM implementation with business networking as the moderator effect?
5. What is the relationship between the antecedents' factors influencing CDM implementation within the agriculture, energy and forestry industries in Malaysia?

1.6 Significance of the Study

This study is significant due to a number of reasons. Firstly, it will explore the influencing factors of CDM development in Malaysia from business perspectives, which has not been well addressed in previous studies. It will focus on a sample from Malaysia, as a developing country, within agriculture, energy and forestry sectors, where few similar studies have been conducted. Although a number of previous studies exist in this context, considering the EMPs in Malaysia (MGTC, 2012), more in-depth studies are required to shed light on the EMPs and CDM relationship in the Malaysian context.

Secondly, this study will create better understanding in future development of environmental practices projects in Malaysia in determine the impact on the contribution of CDM by contributing to sustainable future with opportunities to drive sustainable development to Malaysia. The intended outcome of the study are with hope to improve an understanding of CDM implementation factors and encourage continuous improvement in environmental projects that soon will become a common practice within environmental practices companies in Malaysia.

Third, this study is important to discover the most influencing factors which encourage EMPs companies to implement the CDM projects that enable growth and development to Malaysia with green projects implementation. Besides, as the EMPs market will continue to grow in the coming years and act as the main contributor in mitigating the climate change, the EMPs companies are one of the market forces that contribute to environmental friendly society. Therefore, environmental practices represent a trade opportunity for developing countries to collaborate with industrialized country, to develop new industries and technologies such as CDM and assist in creating cleaner economies and environment. As an alternative towards

mitigating the climate change, EMPs has strong influenced on business network which drives the business organization to move forward in implementing environmentally business and at the same time contribute to a sustainable development.

1.6.1 Theoretical Contributions

The concept EMPs adoption in Malaysia involves different behavioral norms in order to ensure sustainability. However, for this study the theoretical model based on the institutional theory and transaction cost theory are developed to understand the EMPs adoption by focusing on the CDM implementation in Malaysia. This study contributes by embedding institutional theories to account the various factors that influence the climate change mitigation effort.

Furthermore, Malaysia already has experience in implementing projects relevant to climate change and CDM-like such as renewable energy supply, demand side management, fuel switching and forestry. However, CDM projects are different because it includes another kind of input which is carbon investment. The CDM project generates carbon credits which have a monetary value. Thus, the scope selected for the practical contributions are projects in the renewable energy, in the solid waste management sectors, biomass industries, and water recovery practitioners. This study will contributes information with in-depth and more specific results of the EMPs in order to generate a more comprehensive assessment of the implementation of CDM in Malaysia.

Therefore, it is very beneficial to understand and identify the influencing factors of CDM implementation in Malaysia as regards to foresee the impact on business survival and establish sustainable development in the future.

1.7 Scope of Study

This research focuses on EMPs companies within the energy, agricultures and forestry sectors in Malaysia, as defined by MGTC (2009). Selecting industry in which certain criteria is met, at the same time able to attain as much information and knowledge of CDM implementation and the networks that effect over implementation can broaden the research scope.

Key areas of investigation are the influencing factors to adopt EMPs, and the antecedents factors towards CDM implementation and business networking as the encouragement for CDM implementation. Based on certain assumptions were made regarding the nature of the research, when the respondents answering the questionnaires, all respondents truthfully shared their perceptions and practices, answered the questions honestly, and did not modify or exaggerate their practices to make it socially desirable for the purpose of the current study. Therefore, it can be assumed that the survey conducted by its owner/manager is a good representative of the firm's to present the firm's performance.

1.8 Organization of Remaining Chapters

This research is presented into six chapters. Chapter one provides introduction, research background, problem statements, research objective, research questions and significance of study.

Chapter Two will be started with extensive and detailed literature review which is to cover theories, framework, hypotheses development and ideas that had been established by previous scholars and researchers in this particular topic.

In Chapter Three, research design framework, pilot study analysis will be formed and relevant research methodology will be proposed. Research data collected

thereafter will be duly analyzed by using SEM SmartPLS technique and results inferred thereof will be presented in Chapter Four.

This will be followed by detailed discussions in Chapter Five, which are to be supported by established literatures' findings. Final conclusions will be made and due recommendations will also be suggested for future research on encourage continuous improvement in implementing CDM projects in Malaysia.

1.9 Definition of Terms

In this section, a definition for the key terms applied in this research is provided. Although quite a number of definition have been offered for the following terms, only the definition which will be applied and considered as the basis in this research will be introduced here.

- *Annex I countries:* Defined as industrialized countries and economies in transition (UNFCCC, 1992).
- *Annex II countries:* Defined as developed countries which pay for costs of developing countries (UNFCCC, 1992).
- *Non Annex I countries:* Defined as developing countries (UNFCCC, 1992).
- *Baseline and monitoring methodology:* A methodology for a CDM project activity or CPA comprising two related parts; a baseline methodology and a monitoring methodology. See also the definitions of “baseline methodology” and “monitoring methodology” (UNFCCC, 2012).
- *Biomass :* Non-fossilized and biodegradable organic material originating from plants, animals and micro-organisms including: (UNFCCC, 2012)
 - (a) Biomass residue;
 - (b) The non-fossilized and biodegradable organic fractions of industrial and municipal wastes; and

(c) The gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material.

- *Board (CDM Executive Board)* : The Executive Board of the CDM as defined in Article 12 of the Kyoto Protocol. The function of the Board, whose members are elected by the CMP, is to supervise the CDM in accordance with paragraph 5 of the annex to decide (UNFCCC, 2012).
- *CER (certified emission reduction)*: A unit issued for emission reductions from CDM project activities or PoAs in accordance with the CDM rules and requirements, which is equal to one metric tonne of carbon dioxide equivalent, calculated using global warming potentials defined by decision or as subsequently revised in accordance with Article 5 of the Kyoto Protocol (UNFCCC, 2012).
- *Clean Development Mechanism*: Defined in Article 12 of the Protocol, allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol (Annex B Party) to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO₂, which can be counted towards meeting Kyoto targets (UNFCCC, 1998).
- *Climate change*: Defined as a change in climate which results from increased greenhouse gasses (GHG) in the atmosphere (Al-Amin et al., 2010).
- *Environment*: Defined as the quantity and quality of natural resources, and the ambient environment which consists of the water, air, landscape, and atmosphere (Gupta, 1995).
- *Greenhouse gas*: Defined as a gas that contributes to the greenhouse effect by absorbing infrared radiation (IPCC, 2002).

- *Green technology*: Defined as the application of one or more of environmental science, green chemistry, environmental monitoring and electronic devices to monitor, model and conserve the natural environment and resources, and to curb the negative impacts of human involvement.
- *Kyoto Protocol*: Defined as a protocol to the United Nations Framework Convention of Climate Change aimed at fighting the global warming (UNFCCC, 1998).
- *Regulations*: Defined as the official mechanisms, in the form of laws, standards, procedures, and incentive structures, set by regulatory institutions (government agencies, NGOs, etc.) to motivate business organizations to adopt environmentally responsible behavior.
- *PDD (project design document)* : The document prepared by the project participant of a CDM project activity which sets out in detail, in accordance with the CDM rules and requirements, the CDM project activity which is to be undertaken. The form of PDD, and guidelines on preparing the PDD, are publicly available on the UNFCCC CDM website (UNFCCC, 2012).
- *PoA-DD (Programme of activities)*: The document prepared by the CME of a PoA, which sets out in detail, in accordance with the CDM rules and requirements, the PoA which is to be undertaken. The form of PoA-DD and guidelines on preparing the PoA-DD are publicly available on the UNFCCC CDM website (UNFCCC, 2012).
- *Sustainable development*: Sustainable development is defined as meeting the needs of the present generation without compromising the ability of future generations to meet their own needs (Razak et. al. 2009).

- *Technology transfer*: Defined as a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different stakeholders such as government, private sector entities, financial institutions, non-governmental organizations (NGOs) and research education institutions (IPCC, 2000).